IEEE P802.11
Wireless LANs

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| Comment Resolution on TDLS |
| Date: Nov 8th, 2023 |
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 Abstract

This submission proposes resolutions for the following 1 comment received for TGbe LB271:

* 10 CID: 19965, 19968, 19969, 19972, 19980, 19981, 19992, 19993, 19994, 19995

SP: Do you agree to the resolutions provided in doc 11-23/1782r0 for the following CIDs for inclusion in the latest 11be draft?

19965, 19968, 19969, 19972, 19980, 19981, 19992, 19993, 19994, 19995

Revisions:

* Rev 0: Initial version.

***TGbe editor: Please note Baseline is 11be D4.1***

Interpretation of a Motion to Adopt

A motion to approve this submission means that the editing instructions and any changed or added material are actioned in the TGbe Draft. This introduction is not part of the adopted material.

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| **CID** | **Pg/Ln** | **Comment** | **Proposed Change** | **Resolution** |
| 19968 | 575.09 | TDLS peer STAs should be able to use a r-TWT schedule to communicate over the TDLS link. However, the AP-side and STA-side procedures to enable the use of r-TWT for TDLS communication is currently missing in the 11be spec. | Please add text in the spec related to procedures to enable r-TWT operation for TDLS communications. | **Rejected**This issue was discussed in the group but could not reach a consensus. See doc 11-23/1553r3 for more details. |
| 19972 | 575.09 | Assuming two non-AP MLDs have already set up a single TDLS direct link between the two non-AP MLDs, the procedure for turning on the EMLSR mode for the P2P communication between the two non-AP MLDs is not defined. Moreover, the procedure for EMLSR operation for TDLS communication between two non-AP MLDs is currently missing in the spec. | Procedures for turning on EMLSR mode while the non-AP MLD is involved in TLDS operation needs to be described in the spec. | **Rejected**Currently, the EMLSR is defined as an operation explicitly between AP MLD and a non-AP MLD. Defining the EMLSR operation between two non-AP MLDs over P2P links would be a nontrivial task. Also, typically EMLSR is applied with MLO (unless the intention is to use single link EMLSR operation for PS). However, multi-link TDLS, the IEEE defined P2P, is not currently supported in 11be. |
| 19965 | 575.11 | For the scenario where there is a peer-to-peer link (e.g. TDLS link) between any pair of STAs affiliated with a pair of non-AP MLDs over one link, and if any of the non-AP MLDs is not STR capable over any of the links, the other NSTR link(s) become essentially ineffective. Consider the following scenario that illustrates this situation--Assume that MLD\_S and MLD\_R are two non-AP MLDs and MLD\_A is an AP MLD. STA1 and STA2 are two non-AP STAs affiliated with the non-AP MLD, MLD\_S; STA3 and STA4 are two non-AP STAs affiliated with non-AP MLD, MLD\_R; and AP1 and AP2 are two APs affiliated with AP MLD, MLD\_A. Two links have been set up between MLD\_S and MLD\_A--- one between STA1 and AP1 over Link 1, and the other between STA2 and AP2 over Link 2. Moreover, two links have been set up between MLD\_R and MLD\_A--- one between STA3 and AP1 over Link 1, and the other between STA4 and AP2 over Link 2. STA3 and STA4, operating on Link 1 and Link 2, respectively, form an NSTR link pair. Now, a TDLS link has been established between STA1 and STA3. When STA3 is communicating to STA1 over the TDLS direct link, AP MLD, MLD\_A, usually is not aware of the communication over the TDLS link. MLD\_A is aware of MLD\_R' s NSTR capability; so without the TDLS link as long as STA3 is not transmitting to AP1 over Link 1, AP2 can perform downlink transmission to STA4 over Link 2. However, over the TDLS direct link, if STA3 is transmitting to STA1, then STA4 would not be able to receive packets from AP2 over Link2. | Spec needs to provide solution/guideline for handling NSTR issue when one or more non-AP STAs, affiliated with a non-AP MLD and forming NSTR link pair(s), establish TDLS direct link with one or more non-AP STAs affiliated with another non-AP MLD. | **Rejected**There have been discussions in the group on this issue in the past but there was no consensus. Please see doc 11-23/1124r0 for prior discussion on this. |
| 19969 | 575.09 | While a non-AP MLD is communicating with its associated AP MLD and is operating under the EMLSR mode, how it is possible for the non-AP MLD to establish one or multiple peer-to-peer links with another peer non-AP MLD is not clear based on the latest IEEE 802.11be specification. Also, the P2P setup procedure, while operating in the EMLSR mode, is currently missing in the spec. | Please provide text on the procedures to transition into P2P mode when the non-AP MLD has been in EMLSR mode with its associated AP MLD. | **Rejected**The current single TDLS link discovery/setup process in the spec is broken for EMLSR/EMLMR devices. A device in the EMLSR/EMLMR mode cannot complete the TDLS discovery and the setup process using the existing procedure. There have been attempts to resolve the issue in the past. However, there was no consensus. Please see doc 11-23/1124r0 for prior discussion on this. |
| 19980 | 575.09 | If a non-AP MLD is operating in EMLMR mode, how it is possible for the non-AP MLD to establish a TDLS direct link with another peer non-AP MLD is not clear based on the latest IEEE 802.11be specification. | Please provide text on the procedures to initiate a TDLS link when the non-AP MLD has been in EMLMR mode with its associated AP MLD. | **Rejected**The current single TDLS link discovery/setup process in the spec is broken for EMLSR/EMLMR devices. A device in the EMLSR/EMLMR mode cannot complete the TDLS discovery and the setup process using the existing procedure. There have been attempts to resolve the issue in the past. However, there was no consensus. Please see doc 11-23/1124r0 for prior discussion on this. |
| 19981 | 575.09 | Please clearly state that although 11be does not allow a non-AP MLD to establish more than one TDLS links with another non-AP MLD, the non-AP MLD can set up a second TDLS direct link with a different non-AP MLD. For example, a first non-AP MLD can set up one TDLS direct link with a second non-AP MLD and another TDLS direct link with a third non-AP MLD. | as in comment. | **Revised**Agree in principle. A note is added to clarify this.**TGbe editor, please make change as shown in this doc 11-23/1782r0 tagged by #19981.** |
| 19992 | 575.09 | The current single TDLS link discovery/setup process in the spec is broken for EMLSR or single radio devices. For example, when the MLD in the EMLSR mode (or a single radio non-AP MLD) is the TDLS initiator and a TDLS responding device is a legacy device, the TDLS discovery response can be sent over a link but the EMLSR device may not be operating on that link when the response frame is sent by the TDLS responder (EMLSR device at that time may have the radio on another link). Note that the response frame is not sent through the AP MLD. | Please provide text illustrating the mechanism to handle the issue related to TDLS discovery/setup process with device in EMLSR mode. | **Rejected**The current single TDLS link discovery/setup process in the spec is broken for EMLSR/EMLMR devices. A device in the EMLSR/EMLMR mode cannot complete the TDLS discovery and the setup process using the existing procedure. There have been attempts to resolve the issue in the past. However, there was no consensus. Please see doc 11-23/1124r0 for prior discussion on this. |
| 19993 | 575.09 | The current single TDLS link discovery/setup process in the spec is broken for EMLMR devices. For example, when the non-AP MLD in the EMLMR mode is the TDLS initiator and a TDLS responding device is a legacy device, the TDLS discovery response can be sent over a link that is included in the EMLMR links and the EMLMR device is involved in EMLMR frame exchange on another link. The EMLMR device may not have any radio left on the link on which the response frame is sent by the TDLS responder. | Please provide text illustrating the mechanism to handle the issue related to TDLS discovery/setup process with device in EMLMR mode. | **Rejected**The current single TDLS link discovery/setup process in the spec is broken for EMLSR/EMLMR devices. A device in the EMLSR/EMLMR mode cannot complete the TDLS discovery and the setup process using the existing procedure. There have been attempts to resolve the issue in the past. However, there was no consensus. Please see doc 11-23/1124r0 for prior discussion on this. |
| 19994 | 575.09 | When an NSTR non-AP MLD is the TDLS initiator, the TDLS responder can send the TDLS discovery response over a first link (direct link) while the NSTR non-AP MLD is transmitting frames to the AP MLD on a second link, where the first link forms an NSTR link pair with the second link. Accordingly, the NSTR non-AP MLD would not be able to receive the response frame from the TDLS responder. | Please provide text specifying rules for TDLS discovery/setup for the NSTR non-AP MLDs. | **Rejected**There have been discussions in the group on this issue in the past but there was no consensus. Please see doc 11-23/1124r0 for prior discussion on this. |
| 19995 | 575.09 | An AP-MLD can intend to enable a setup link that may form an NSTR link pair to the off-channel TDLS direct link, as the AP MLD is not involved in TDLS channel switch and is unaware of the off-channel TDLS direct link. The potential NSTR link pair between the off-channel TDLS direct link and any link that is intended to be enabled in TID-to-link mapping negotiation should be avoided. If TID-to-link mapping negotiation is unsuccessful, default mapping will be applied, which will cause the NSTR link pair or congestion. | Please provide rules/mechanisms related to TDLS channel switch for non-AP MLD with NSTR constraints. | **Rejected**There have been discussions in the group on this issue in the past but there was no consensus. Please see doc 11-23/1124r0 for prior discussion on this. |

***TGbe editor: Please add NOTE 3 after NOTE 2 in clause 35.3.21.1 (General) as follows:***

An EHT non-AP STA affiliated with a non-AP MLD shall establish only a single link TDLS.

NOTE 2—The single link TDLS direct link can be established between a non-AP STA affiliated with a non-AP MLD and another non-AP STA that might not be affiliated with a non-AP MLD.

NOTE 3--- The non-AP STA can establish TDLS direct links with more than one peer devices.